

### DETAILED ACTION

The information disclosure statement filing is sufficient and the references shall be considered. In regard to the amendments to the specification, the inclusion of the appropriate headings is recognized by the examiner the objections to the specification are hereby withdrawn. The claims, however, continue to be unpatentable over the prior art.

#### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claim 1-9, 11-14 and 16-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over either of Schrof et al. US 2003/0175506 (hereinafter '506) or Schrof et al. WO01/84544 (hereinafter '544) either in view of Ha et al. in US 2002/0032251.

Regarding claim 1, Schrof et al. teaches a method of making a laminate (abstract) comprising applying, to at least one substrate ('506: [0093]), a laminating adhesive ('506: [0011]) comprising a polymer comprising free-radically polymerized compounds ('506: [0026]), and bonding the at least one substrate to a transparent film ('506: [0095]) to form a laminate of the at least one substrate and the transparent film ('506: [0098]). The examiner recognizes the definition of a laminate to be a material constructed by uniting two or more layers of material together. The process of creating a laminate is recognized as laminating, which in common parlance refers to sandwiching something between layers of plastic and sealing them with heat and/or pressure, usually with an adhesive, so as such, the above mentioned adhesive taught by Schrof et al. is considered to be a laminating adhesive. It is further recognized by the examiner that the invention disclosed by Schrof et al. teaches a UV-curable adhesive which can be used to coat a support ('506: [0095]; UV transparent film as a support) and bond said support to a substrate, creating what is by definition a laminate ('506: [0098]). Schrof additionally teaches that the glass transition temperature of the polymer discussed above is most

particularly between -40- +100°C. The examiner takes the position that the term high gloss laminate is taken broadly without a point of reference from which to gauge said level of gloss as high and further recognizes that the invention of Schrof is adequately capable of being embossed without delamination as no such evidence is provided to suggest otherwise. The examiner also notes that nothing is presented to indicate an additional feature causing said high gloss and as such since the prior art teaches the limitations of the claims such is also determined to possess the same properties (i.e. high gloss). Furthermore, it is recognized by the examiner that as written, applicants claim that the transparent film can be embossed provides no limitation indicating that it actually is embossed, but rather is simply capable of such. Additionally, the inclusion of the phrase "via the laminating adhesive" is taught above by Schrof whereby the adhesive of Schrof is used to bond the substrate and the film.

Schrof et al. fails to explicitly teach said adhesive also containing compounds B) comprising ethylenically unsaturated, free-radically polymerizable groups wherein the compounds have a weight-average molecular weight of less than 5000 g/mol. Although Schrof identified a particular broader glass transition temperature range of -40 to 100°C that does overlap substantially with -55 to 0°C, Schrof fails to explicitly teach the exact range.

Ha et al. teaches compounds B) comprising ethylenically unsaturated, free-radically polymerizable groups ([0018]) wherein the compounds have a weight-average molecular weight of less than 5000 g/mol ([0070]). It is commonly known to one of ordinary skill in the art and further stated in Ha et al. that the (meth)acrylate functional

groups of the reactive diluents are ethylenically unsaturated, free-radically polymerizable groups ([0037]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Schrof et al. to include compounds B) comprising ethylenically unsaturated, free-radically polymerizable groups wherein the compounds have a weight-average molecular weight of less than 5000 g/mol in view of Ha et al. because such compounds are known to offer improved viscosity and adhesion ([0031]). Furthermore, given that the range of Schrof encompasses much of the applicable temperatures of the claimed range in relation to glass transition temperature it would have been obvious to utilize the range of -55 to 0°C, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller*, 105 USPQ 233).

Regarding claim 2, the method of claim 1 is taught as seen above. Schrof et al. further teaches that the polymer is composed of at least 40% by weight of (meth)acrylates ('506: [0028]; [0038]).

Regarding claim 3, the method of claim 1 is taught as seen above. Schrof et al. further teaches the polymer is crosslinkable by irradiation with high-energy light ('506: [0012]).

Regarding claim 4, the method of claim 1 is taught as seen above. Schrof et al. further teaches that attached to the polymer is a photoinitiator ('506: [0012], [0015]).

Regarding claim 5, the method of claim 1, wherein the polymer A) has an average molar weight which is at least twice as high as the molar weight of B) is not

explicitly taught in Schrof et al. or Ha et al.. The examiner takes official notice of the fact that although not explicitly stated it would be obvious to of ordinary skill in the art that the polymer made up C<sub>20</sub> alkyl (meth)acrylates ('506: [0030]) with attached photoinitiators ('506: i.e. [0021]-[0024]; derivative formula) would more than double the molar weight of compounds B) disclosed by Ha et al ([0070]). Furthermore it is recognized by the examiner that only an upper threshold is designated by Ha et al. ([0070]) indicating it even more likely that said polymer A) exceeds the molar weight of compounds B) by at least a factor of two. It is finally noted by the examiner that although the arguments presented indicate such a value is evident in the prior art the examiner recognizes that the applicant gives no justification as to the benefit afforded by such a weight ratio and as such it can also be reasonably concluded that such a weight ratio imparts no functionality and therefore substantially similar results can be attained though other weight ratios.

Regarding claim 6, the method of claim 1 is taught as seen above. Schrof et al. further teaches that the polymer has a K value of from 10 to 90 as measured in a 1% tetrahydrofuran solution at 21.degree. C ('506: [0053]).

Regarding claim 7, the method of claim 1 is taught as seen above. Schrof et al. further teaches that the polymer is a solution polymer ('506: [0011]). It is recognized by the examiner that among the preferred embodiments taught by Schrof et al. is the adhesive coating composition (polymer) in the form of a solution.

Regarding claim 8, the method of claim 1 is taught as seen above. The compounds taught by Ha et al. as an obvious incorporation into the invention taught by

Schrof et al. were shown by Ha et al. to have specific properties, which teach that the compounds B) at 21.degree. C. and 1 bar are liquid and have a viscosity of from 0.05 to 50 Pas ([0070]). It is recognized by the examiner that the units of the viscosities need to be converted ( $1000\text{mPas} = 1\text{Pas}$ ) in order for their equivalence to be realized.

Furthermore, it should be noted that it would have been obvious to one of ordinary skill in the art at the time the invention was made that the use of term diluent in Ha et al. is explicitly referencing a liquid as such is consistent with the termed definition. It is further recognized by the examiner that at the time the invention was made it was commonly known to one of ordinary skill in the art that the viscosity of a liquid is inversely proportional to temperature and varies very minimally in regards to the required 10 fold drop needed for the disclosed range in Ha et al. (0.5Pas) to fall out of the claimed range. The examiner recognizes that such a drop would not be feasible with even a large range of temperature change and even less so at a range as small as that between the claimed 21.degrees.C. and the disclosed room temperature (25.degrees.C) in Ha et al.. It is further recognized by the examiner that said viscosity measurement taught by Ha et al. is silent as to any excess pressure present at the time of measurement and as such it is reasonably concluded that said measurement is conducted under normal conditions of atmospheric pressure (1 bar) as would be concluded by one of ordinary skill in the art.

Regarding claim 9, the method of claim 1 is taught as seen above. The compounds taught by Ha et al. in claim 1 as an obvious incorporation into the invention taught by Schrof et al. were taught by Ha et al. to have specific properties, which teach

that the compounds B) comprise from 1 to 5 polymerizable groups per molecule ([0079], [0085]). It is recognized by the examiner that the reactive diluents disclosed by Ha et al. are equivalents to the compounds B) claimed by applicant in that they are shown to be ethylenically unsaturated, free-radically polymerizable groups wherein the compounds have a weight-average molecular weight  $M_w$  of less than 5000 g/mol. Furthermore, it is recognized by the examiner that the reference to the term "groups" ([0085]) is a specific reference to the functional groups on the acrylate functional diluent as is consistent with the terminology and inventive entity disclosed in Ha et al..

Regarding claim 11, the method of claim 1 is taught as seen above. The compounds taught by Ha et al. in claim 1 as an obvious incorporation into the invention taught by Schrof et al. were taught by Ha et al. to have specific properties, which teach that the compounds B) are (meth)acrylic esters of polyhydric, unalkoxylated or alkoxylated alcohols ([0079]). The examiner recognizes that the disclosed ethoxyethoxy-ethyl acrylate in Ha et al. as one of the preferred monomers would satisfy as a (meth)acrylic ester.

Regarding claim 12, the method of claim 1 is taught as seen above. Schrof et al. fails to explicitly teach the method of claim 1, wherein the weight fraction of the compounds B) is from 5 to 70% by weight, based on the total weight of A)+B).

The compounds taught by Ha et al. as an obvious incorporation into the invention taught by Schrof et al. were shown by Ha et al. to have specific properties wherein having the weight fraction of the compounds B) is from 5 to 70% by weight, based on the total weight of A)+B) would have been obvious. Ha et al. teaches that the

addition of the acrylate functional reactive diluents (compounds B)) can be adjusted in both types and amounts added to achieve optimal viscosity and adhesion as it pertains to the ultimate intended use of the product ([0031]). It is further taught by Ha et al. that the acrylate functional reactive diluents (compounds B)) are preferably added at an amount of 5 to 70% by weight ([0078]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Schrof et al. to include the weight fraction of the compounds B) as 5 to 70% by weight, based on the total weight of A)+B) in view of Ha et al. because it is was known that the acrylate functional reactive diluents can be added in any ratio and amount to aid in improving viscosity and adhesion ([0031]).

Regarding claim 13, the method of claim 1 is taught as seen above. Schrof et al. further teaches the laminating adhesive comprising from 0.0001 to 1 mol of a photoinitiator or photoinitiator group per 100 g of the total weight of polymer A) and compounds B) ('506: [0013]). The examiner recognizes that the disclosed values are based solely upon the ratio of the photoinitiator to polymer A); however, it is noted that even if B) were to take up a majority of the laminating adhesive as an additive compound it would still allow the photoinitiator to fall within the disclosed range as would be commonly understood to one with ordinary skill in the art. As proof of concept the examiner recognizes that were B) to encompass 70% of the overall composition (maximum threshold disclosed by applicant) and there was 1 mol of photoinitiator per 100g of A) as discussed above than the overall amount of photoinitiator would still be at 0.3 mol per 100g of A) and B), well within the accepted range.



Regarding claim 14, the method of claim 1 is taught as seen above. Schrof et al. further teaches the laminating adhesive comprising less than 5 parts by weight of water or solvent, based on 100 parts by weight of the total weight of A) and B) ('506: [0060]).

Regarding claim 16, the method of claim 1 is taught as seen above. Schrof et al. further teaches that the transparent film carries print ('506: [0069]). It is recognized by the examiner that the films listed are further defined as being UV transparent ('506: [0095]).

Regarding claim 17, the method of claim 1 is taught as seen above. It is recognized by the examiner that the laminate produced by the method of claim 1 would have been obvious due to the nature of the inventions disclosed in Schrof et al. and Ha et al.. Schrof discloses a laminate produced by the method of claim 1, but fails to teach the laminate would further contain compounds B); however, such compounds were known in the art at the time the invention was made and shown to be an obvious incorporation as discussed above in claim 1 rejection. It is therefore concluded that such a laminate would have been obvious and the method of producing that laminate would likewise have been obvious.

Regarding claim 18, the method of claim 1 is taught as seen above. Schrof et al. further teaches that the transparent film is transparent to UV light ('506: [0095]).

Regarding claim 19, the method of claim 1 is taught as seen above. The examiner recognizes that it is obvious that since both applicant and Schrof et al. teach the use of the same films ('506: [0068], [0069], [0091]) that both would possess the same properties (i.e. transparent to electron beams). Furthermore, it is recognized by

the examiner that electron beams are merely another form of high-energy light and would perform substantially the same function as the UV induced crosslinking through UV transparent films disclosed by Schrof et al. above.

Regarding claim 20, the method of claim 1 is taught as seen above. Schrof et al. further teaches the method comprising irradiating the transparent film with high-energy light ('506: [0085]). It is recognized by the examiner that as discussed in claim 18 above, Schrof et al. utilizes the use of UV transparent film as supports for the laminating adhesive, which are meant to be irradiated with high-energy (i.e. UV) light in order to bring about crosslinking ('506: [0085]).

Regarding claim 21, the method of claim 1 is taught as seen above and further as identified above Ha teaches the compounds B) comprising ethylenically unsaturated, free-radically polymerizable groups ([0018]) wherein the compounds have a weight-average molecular weight of not more than about 550, which recognizably includes numbers at least up to 550 and given the term about, reasonably above 550. The examiner recognizes that the claimed range of over 250 would have been obvious given the teaching of Ha, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller*, 105 USPQ 233).

5. Claim 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over either of Schrof et al. US 2003/0175506 (hereinafter '506) or Schrof et al. WO01/84544 (hereinafter '544) either in view of Ha et al. in US 2002/0032251 and further in view of Higbie et al. US 5,110,889.

Regarding claim 10, the method of claim 1 is taught as seen above. The compounds B) taught by Ha et al. in claim 1 as an obvious incorporation into the invention taught by Schrof et al. were taught to have acrylate functionality as discussed above. Schrof et al. in view of Ha et al. fail to specifically teach the polymerizable groups of compounds B) as acryloyl or methacryloyl groups.

Higbie et al. teaches the process of acrylation being alternatively carried out by a procedure using acryloyl chloride in the process of generating radiation curable diluents (column 7, lines 66-68).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Schrof et al. in view of Ha et al. and further in view of Higbie et al. because the above mentioned acryloyls are known to be an equivalent to the acrylates used by Ha et al. as polymerizable groups. It is recognized by the examiner that the applicant has not provided sufficient evidence to suggest the contrary and as such it has been concluded that acrylate groups, which are known to also be ethylenically unsaturated and useful in polymerization, would perform substantially the same function.

### ***Response to Arguments***

1. Applicant's arguments filed 01/10/2007 have been fully considered but they are not persuasive.

Applicant contends that the radiation curable composition of Schrof is different than Applicant's and is used in a different manner and purpose and further contends the

glass transition temperature range is broader than that of Applicant's (addressed above in claim 1).

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the preferred initiating system) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. Furthermore, the additional teachings present in Schrof for which Applicant contends are different, are adequate within the scope the claim given the use of the term comprising, indicating including but not limited to. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant further contends that the proper weight range is not taught, but such was not present in the original claims and arguments towards the newly included range bound by 250 g/mol are addressed above in claim 21. Also, applicant contends that Schrof et al. is not a non-tacky, flexible material as a layer between substrate and film to be bonded which results in a high glass laminate as shown in the examples that is especially characterized by the lack of separation of film layer from the adhesive in an embossed or fluted object that is prepared ad rather when applied to a substrate forms a data recording medium.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., tackiness, etc.) are not recited in the rejected claim(s). Although the claims are

interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The applicant contends Ha et al. is used for a different purpose and (i.e. binding polycarbonate substrates) and polycarbonates are rigid and the product formed is not high gloss. The applicant further contends that Ha et al. provides additional teachings not in the claimed invention (i.e. a sulfur compound, etc.) and points out that the applicable compound of Ha et al. (incorporated as compounds B in claim 1 above) actually reacts with a polyol to form a larger compound.

The examiner notes that as stated above the newly incorporated "high gloss" is broadly interpreted to be inherent in the teachings of the prior art (see claim 1 above). Furthermore, in response to applicant's argument that the references teaches bonding a different substrate, the examiner points out that it is Schrof, which teaches the remainder of the features and Ha et al. is incorporated for the teachings of applicant's B) compounds. Applicant admittedly recognizes that the compounds C) taught in Ha et al. (as discussed above the compounds C of Ha et al. correspond to the compounds B of the claimed invention) possess a weight of about 550 and a viscosity at room temperature of less than about 500 mPas and as such incorporation of the compounds C) in Ha et al. with the invention of Schrof teaches the claimed invention.

Applicant contends that improper motivation is provided for incorporating just the reactive diluents of Ha et al. (which when incorporated teaches the claimed invention) and further argue hindsight reasoning.

As stated in the above office action, it was known in the art that the reactive diluents of Ha et al. could be incorporated as means for improving the viscosity and adhesion (Ha et al; [0031] provides acrylate functional reactive diluents may be added to achieve improves viscosity and adhesion) and such are recognizably important features involved in preparing a laminate which would have provided ample motivation for one of ordinary skill in the art at the time of the invention to therefore have tried said reactive diluents with the invention of Schrof. The additional features present in Ha are negligible since Ha is presented merely for the teachings of the reactive diluents and the beneficial properties they offer when incorporated in an adhesive composition (therefore all other arguments drawn to Ha et al. used in the preparation of DVD's is moot since Ha is merely providing the reactive diluents to be incorporated with the above addressed teachings of Schrof). In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Applicant contends the reference does not overcome the deficiencies of the two cited primary references, but cites no specific argument towards the rejection of claim 10.

The examiner disagrees with applicant's contention and points out that Higbie recognizes the interchangeability between acrylate and acryloyl groups as stated above in office action. Furthermore, the examiner points out the above deficiencies are not present for the reasons stated above.

### **Conclusion**

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael N. Orlando whose telephone number is (571)-

270-5038. The examiner can normally be reached on Monday-Friday, 7:30am-5:00pm, alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Del Sole can be reached on (571)272-1130. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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